

## Claims

1. A receiving method in a receiver of a radio system, comprising:  
receiving a signal with an array antenna comprising at least two antenna elements,  
5       oversampling the received signal,  
      measuring the spatial and temporal colour of the received oversampled signal,  
      combining the received signal using combined maximum ratio combining and space-time interference rejection combining,  
10       controlling the combining of the received signal on the basis of the measurement result.
2. The method of claim 1, further comprising:  
calculating the energy of interference;  
calculating the cross-correlation of noise between samples of the  
15   received signals,  
      calculating a threshold value as a quotient of the above values,  
      controlling the combining on the basis of the threshold value.
3. The method of claim 2, further comprising:  
calculating at least one scaling factor as a function of the threshold  
20   value, and  
      controlling the combining on the basis of the scaling factor.
4. The method of claim 3, further comprising:  
calculating the scaling factor according to formula  $e^{\beta}$ , where  $\beta$  is the threshold value.
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      calculating the scaling factor according to formula  $A\beta$ , where  $\beta$  is the threshold value and  $A$  is a predetermined constant.
6. The method of claim 1, further comprising:  
calculating a noise covariance matrix comprising noise variance  
30   terms, temporal covariance terms and spatial covariance terms, and  
      scaling the spatial covariance terms on the basis of the measurement result.
7. The method of claim 3 and 6, further comprising:  
scaling the spatial covariance terms using the scaling factor.
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comparing the calculated threshold value with a pre-determined value, and if the threshold value exceeds the given pre-determined value, the combining of the received signal is controlled on the basis of the scaling factor.

9. The method of claim 3, further comprising:

5 calculating a scaling factor for each antenna element pair separately.

10. A receiver comprising an array antenna for signal reception, the array antenna comprising at least two antenna elements, the receiver further comprising

10 means for oversampling the received signal,  
 means for measuring the spatial and temporal colour of the samples  
 means for combining the received signal using combined maximum ratio combining and space-time interference rejection combining, and  
 means for controlling the combining of the received signal on the  
 15 basis of the measurement result.

11. The receiver of claim 10, further comprising

means for calculating the energy of noise;  
 means for calculating the cross-correlation of noise between sam-  
 20 ples of the received signals,  
 means for calculating a threshold value as a quotient of the above values,  
 means for controlling the combining on the basis of the threshold value.

12. The receiver of claim 11, further comprising

25 means for calculating at least one scaling factor as a function of the threshold value, and controlling the combining on the basis of the scaling factor.

13. The receiver of claim 10, further comprising

means for calculating the scaling factor according to formula  $e^{\beta}$ ,  
 30 where  $\beta$  is the threshold value.

14. The receiver of claim 12, further comprising

means for calculating a noise covariance matrix comprising noise variance terms, temporal covariance terms and spatial covariance terms, and  
 means for scaling the spatial covariance terms using the scaling fac-  
 35 tor.

15. The receiver of claim 12, further comprising

means for comparing the calculated threshold value with a pre-determined value, and making the decision of the use of the scaling factor on the basis of the comparison.

16. The receiver comprising
  - 5 an array antenna for signal reception, the array antenna comprising at least two antenna elements,
    - an analog to digital converter for oversampling the received signal,
    - a calculator for measuring the spatial and temporal colour of the samples
  - 10 a calculator for combining the received signal using combined maximum ratio combining and space-time interference rejection combining, and
    - a calculator for controlling the combining of the received signal on the basis of the measurement result.